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Fig. 1.

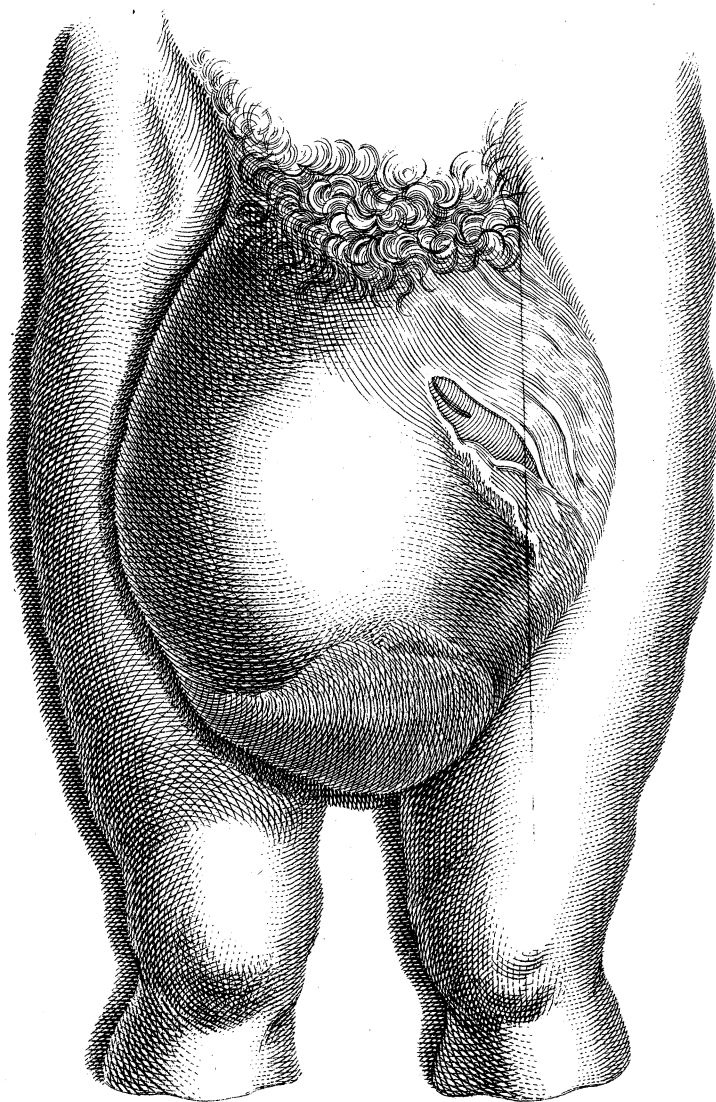


Fig. 2.



Received April 24, 1766.

XVIII. *An Account of an uncommon large Hernia, in a Letter from Dr. George Carlisle, to the Right Rev. the Lord Bishop of Carlisle, F. R. S.*

Carlisle, April 18, 1766.

My Lord,

Read May 14, 1766. **W**HEN I shewed you the drawing of an uncommon large hernia at Rose, you were pleased to say, you should be glad to have the history of it, and of what occurred in examining the body after death, in order to communicate it to the Royal Society: from that time I determined to draw out the case, but have been prevented by various other engagements, till now, that I take the liberty to present it to your Lordship; and shall be extremely rejoiced if it prove agreeable to you, and the learned body; with it I inclose an outline of the drawing, TAB. VII. Fig. 1. and an explanation, which may make the description more intelligible. I was sorry, that for want of a proper draftsman, my good friend the captain being out of town, I could not have the situation of the stomach, with the other parts left in the abdomen, taken; but my painter was so squeamish, it was with difficulty we got the outward appearance taken from the dead body.

We

We have had the driest season here I have known; thro' the whole of last year, only 19.705 inches of rain fell; and in the three last months of this, only 1.689 inches, including what melted from the great fall of snow on the 11th and 12th of February, into my receiver: the snow lay then 9 inches perpendicular, upon a level bed in my garden. I am, with great respect,

My Lord,

Your Lordship's much obliged,
and most obedient Servant,

George Carlisle.

JOHN HALLOWDAY, an out-pensioner of Chellsea, aged near 80, having entered very young into the army, and undergone several hardships in the campaigns under the Duke of Marlborough, upon his return to England from Flanders, at the conclusion of the war, first perceived a small tumor in the right side of the scrotum and groin. This he carefully concealed, to avoid the scoffs of his companions, and least it might be the occasion of his discharge, which he dreaded, and wanted to avoid; as he found no other inconvenience from it, but what its bulk occasioned, nor ever had pain, vomiting, obstructions to stools, or any other symptoms of a strangulated hernia. From that time, however, it continued to increase in bulk; and from that, and its weight, grew daily more inconvenient to him, insomuch, that about the year 1725, being

unable to go through the duty of a soldier, he was admitted to the out-pension of Chelsea hospital. Its size was then such, that he was obliged to have a particular bag made in the forepart of his breeches, to enable him to carry about its weight, and always wore a leathern apron to conceal its figure. For six or seven years before his death, the weight and bulk of the hernia had made such an alteration, in the outward appearance of the parts about the scrotum, that the penis was entirely buried in the tumor; a small oval opening only was left, out of which the urine was discharged: this opening was sometimes excoriated, from the acrimony of the urine, as the penis could not be extracted to throw it off, nor the glans be made to appear by any endeavours: after death, it could be protruded no farther outwards, than as it is shewn in Fig. 2. A year or two before his death, after a cold, and fretting the part by too much walking, the urine had brought on a considerable inflammation, which mortified to a large extent, one considerable eschar, formed upon the anterior and most depending part of the bag, one less on the right side where it touched the thigh, and a third behind; yet all cast off and healed kindly, by the help of the bark, warm dressings, &c. Except from this accident, in the latter years of his life, he was not subject to any other complaints than are common at his years; such as dimness of sight, catarrhus coughs, shortness of breath upon motion, swellings of his legs occasionally: and he wore off at last by a gentle decay, having all along had as good an appetite, and digestion, as could be expected at his time of life; regular discharges, both by stool and urine; very rarely vomitings, except from overloading

loading his stomach; purgatives, and every other medicine, operated as regularly upon him, as upon any other person. He was a well-made man, rather above the middle size; was as corpulent, and had as much strength, as most of his years, until within a very little time of his death.

His case having nothing particular in it, but as far as the contents of the abdomen and scrotum were concerned; it was not thought necessary to carry the examination of his body farther than through them.

The large hernial bag I had measured, as exactly as I could, about a year before his death; and found its length, from the os pubis to the most depending point, 15 inches; its greatest breadth, while it lay supported by the thighs, $17\frac{1}{2}$ inches; and its greatest circumference 34 inches: but in the body, the day after death, its length, from the pubis to the most depending part, was only 13 inches; its breadth, to the part where it fell in between the thighs, 12 inches; its circumference round the thick, or smallest part, where it descended from the pubis, 19 inches; and round its large circumference, 27 inches. It was covered with the common integuments of the scrotum; but at its lower and posterior parts, the cellular membrane, or dartos, was reduced to an almost cartilaginous hardness, where the weight, both in sitting, standing, and lying, had the greatest effect: the cicatrices also, where gangrenous sloughs had been cast off, were of an equal firmness, and hardness under the knife. The testicle of the left side was plainly to be felt, at the prominent part, above, and to one side of the opening for the penis, not far from its natural situation: the right testicle was obscurely to be felt, a little above the
lowest

lowest and anterior point of the bag. Besides what appeared upon the front view of the bag, a large portion of it, like a ridge, extended backwards, where the space betwixt the thighs allowed it more room; they being rather more concave than usual, inwardly, towards each other; and more distant, from the constant pressure they sustained. The colour of the bag was the same as that of the other parts, except where the mortified sloughs had been cast off; where it was of a shining white. Upon opening the abdomen, the liver appeared rather large, and farther extended over the left side than usual. The gall-bladder was small, with a little diluted bile in it. None of the intestines appeared, but a portion of the colon, towards the anterior edge of the pelvis, on the left side; where it made two inflections, much in the way as the lowest turns of the intestines are shewn to do, below the omentum, in Eustach. TAB. IX. from these it went downwards, and backwards, into the pelvis, to make its last curve, and be continued into the rectum: which, with that last curve of the colon, was in its natural place and direction. The stomach, instead of an horizontal, had a longitudinal position; its large, and here upper extremity, being placed behind the left lobe of the liver, close to the diaphragm, and its large convex side lay along the left side of the abdomen; it descended to nigh the crest of the os ilium, from whence it turned over the inflection of the colon, before-mentioned, across the pelvis, to the large hernial aperture, in the right side; within the verge of which, it ran downwards about an inch, then ascended, and made a semicircular turn to the pylorus, which mounted towards the abdomen; from

thence the beginning of the duodenum made another turn, to descend into the hernial bag; immediately below which, viz. just within the opening of the hernial bag, the ductus communis choledochus entered it; and seemed the cause which kept it from falling further into the sac. From this, the remainder of the duodenum, and all the other intestines, were entirely contained in the hernial bag, to nigh the extremity of the colon, before-mentioned. The duodenum, after entering the sac, first ran a little downwards, and backwards, then horizontally, and lastly upwards, to within the edge of the sac, towards the abdomen; from thence the tegumen proceeded backwards and downwards, and then formed, with the ileum, pretty nigh their usual convolutions, about the middle of the tumor, as they should have done in the abdomen. The caecum had a very small appendix, but was itself very large; as was the colon through its whole length, while contained in the sac; that part of it, which returned into the pelvis again, being much smaller, even only of the dimensions of the smaller intestines: the length of the colon too seemed more than usual. The caecum began in the lower part of the bag, and from thence the colon kept pretty nigh the course it should have kept, if the bag had been the abdomen, for a great part of its length; running up, from the caecum, along the right side of the bag, to nigh the pubis, and then crossing over towards the left side, before the duodenum, to the left edge of the hernial aperture; at which place, slipping behind the lower extremity of the stomach, it appeared in the pelvis, crossing over to its left side; from thence to follow the course before described. The pancreas lay in a longitu-

longitudinal direction, along the concave arch of the stomach, through its whole course; and was placed before the bodies of the vertebrae. The ductus choledochus, besides its great length from the liver, to within the hernial bag, was of such a width, as easily to admit a middle-sized finger, being about $2\frac{1}{4}$ inches in circumference: in some parts of its course, it was little inferior in width to the gall bladder, in this same subject. The kidneys were rather small, in general sound, except that some few hydatides were here and there fixed upon their outward surface, and that two or three steatomatous tumors, of about the size of a pea, and white, were in the substance of each; but not rising above their surface: they were each in their proper situation; the left lay behind the stomach, and was less, probably from the pressure it was exposed to. The ureters and bladder were in their usual situation; the bladder was no way engaged in the hernia, and a catheter was pretty easily introduced, through the concealed penis, into it. The spleen was small in its natural situation, and sound. The mesenteric glands were numerous, large, hardened, and surrounded with a fat of a deep yellow, as was the pancreas; no omentum appeared; its place seemed supplied by the fat, interspersed among the glands, and pancreas. The testes were of a natural size, but loose and flabby, and had many varicose veins upon their surface: the right, which was so much out of its proper place, was the least, and laxer of the two: the spermatic vessels belonging to it were large, through the great length they ran. The sac and intestines were adherent, almost at every point of their contact; in some places so firmly, that they were with great
T 2
difficulty

difficulty separated, and often not without danger of tearing: the intestines also adhered in the same manner, to one another; all, by means of a firm cellular membrane. The containing bag was very firm, thick and strong, as observed before. Its aperture, at the right ring from the abdomen, was so wide, as readily to allow a middle-sized hand to pass through it, from the abdomen, for a small space, betwixt its anterior edge, and the convolutions of the lower extremity of the stomach, and the semi-circular turn it made to the pylorus, with the beginning of the duodenum from thence, and the other extremity of the duodenum, before the jejunum commenced, and that part of the colon which returned into the pelvis; all of which were lodged in the very aperture: so that the space left unoccupied by these parts could not be much less than 8 inches in circumference: notwithstanding which, very little of a watery fluid was found in the sac: indeed it would not have had a very easy admittance, from the many adhesions formed betwixt the sac and its contained parts, a little below the opening from the abdomen.

The above is a tedious perhaps, but a circumstantial, and just representation of this extraordinary case: which I shall not, at present, lengthen by deductions or reasonings; farther, than to admire the exquisite composition of that most admirably formed machine, which could bear so great an alteration in its parts, without a manifest impediment to its most material actions: seeing here, life, and even health, went happily on, through a great length of years, though the whole system almost of the intestines had been, for many of these years, without the reach of the
action

action of the diaphragm and abdominal muscles, and of the focus of their generally neighbouring parts: requisites, as has been imagined, towards the carrying on their several functions, for the benefit of the animal oeconomy.

George Carlisle.

Received May 12, 1766.

XIX. *Three Papers, containing Experiments on factitious Air, by the Hon. Henry Cavendish, F. R. S.*

Read May 29, Nov. 6.
and Nov. 13, 1766.

BY factitious air, I mean in general any kind of air which is contained in other bodies in an unelastic state, and is produced from thence by art.

By fixed air, I mean that particular species of factitious air, which is separated from alkaline substances by solution in acids or by calcination; and to which Dr. Black has given that name in his treatise on quicklime.

As fixed air makes a considerable part of the subject of the following papers; and as the name might incline one to think, that it signified any sort of air which is contained in other bodies in an unelastic form; I thought it best to give this explanation before I went any farther.

Before